

Serial No. 09/825,973

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Request for Reconsideration dated October 27, 2004

**REMARKS**

Claims 1-16 and 23-34 are pending in the present application.

**Priority Under 35 U.S.C. 119**

Applicants note the Examiner's acknowledgement of the Claim for Priority under 35 U.S.C. 119, and receipt of the certified copy of the priority document.

**Telephone Interview**

Applicants respectfully acknowledge the courtesy extended by Examiner Maldonado during the telephone interview conducted on October 14, 2004. The issues as discussed during the telephone interview will be addressed in the following comments.

**Claim Rejections-35 U.S.C. 103**

Claims 1, 3, 5, 7, 9, 11, 13, 15 and 23-34 have been rejected under 35 U.S.C. 103(a) as being unpatentable over the Imai reference (U.S. Patent No. 6,344,675). This rejection is respectfully traversed for the following reasons.

As emphasized during the telephone interview, the Examiner has alleged in the Final Office Action dated May 10, 2004, that the Imai reference discloses all the features of the claims, but has acknowledged that the reference fails to expressly teach (1) that the ratio of metallic silicide (or cobalt silicide) having the lowest resistance

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among stoichiometric metallic silicide is  $X_0$  to  $Y_0$ , and  $X$ ,  $Y$ ,  $X_0$  and  $Y_0$  satisfy the inequality:  $(X / Y) > (X_0 / Y_0)$ , as in claim 1 for example; (2) a ratio of cobalt to silicon is 1 to  $\alpha$  ( $1 < \alpha < 2$ ), as in claim 3 for example; and (3) a contact specific resistance between the metallic silicide layers and the impurity layers is less than  $1 \times 10^{-7} \Omega - \text{cm}^2$ , as in claim 23 for example. The Examiner has however alleged that "the selection of the claimed stoichiometric ratio and specific resistance is obvious because it is a matter of determining optimum process condition by routine experimentation with a limited number of species to obtain a desired conductivity. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the above-mentioned stoichiometric ratio and resistance to arrive at the claimed invention". Applicants respectfully disagree for the following reasons.

As emphasized in the Remarks section of the Amendment dated February 25, 2004, Manual of Patent Examining Procedure section 2143 sets forth guidelines with respect to the basic requirements of a *prima facie* case of obviousness. As described, to establish a *prima facie* case of obviousness, there must first be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference. The prior art reference (or references when combined) must teach or suggest all the claim limitations. As further set forth in MPEP section 2143.01, obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention when there is some teaching, suggestion, or motivation to do so

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found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art.

As further set forth in MPEP section 2143.01, the mere fact that references can be modified does not render the resultant combination obvious, unless the prior art also suggests the desirability of the combination or modification. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Also of interest, in *In re Kotzab*, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1318 (Fed. Cir. 2000), the Court reversed an obviousness rejection involving a technologically simple concept because there was no finding as to the principal or specific understanding within the knowledge of a skilled artisan that would have motivated the skilled artisan to make the claimed invention.

Applicants respectfully submit that the Imai reference provides no suggestion or motivation to modify the teaching therein to provide (1) that a ratio of metallic silicide having the lowest resistance among stoichiometric metallic silicides is  $X_0$  to  $Y_0$ , and  $X$ ,  $Y$ ,  $X_0$  and  $Y_0$  satisfy the inequality:  $(X / Y) > (X_0 / Y_0)$ , as in claim 1 for example; (2) a ratio of cobalt to silicon that is 1 to  $\alpha$  ( $1 < \alpha < 2$ ), as in claim 3 for example; or (3) a contact specific resistance between metallic silicide layers and impurity layers that is less than  $1 \times 10^{-7} \Omega - \text{cm}^2$ , as in claim 23 for example. The Examiner has merely alleged in hindsight that the selection of these claimed features would have been obvious by way of routine experimentation. However, there is no teaching, suggestion or motivation that can be found either explicitly or implicitly in the Imai reference, or any knowledge generally available to one of ordinary skill established by the Examiner, that would lead

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one of ordinary skill to modify the Imai teaching as suggested by the Examiner.

As asserted during the telephone interview, since the Imai reference does not consider or address ratios of metal to silicon in general, one of ordinary skill would have no motivation in view of the prior art to modify metallic silicide layer 16 in Figs. 12 and 13D of the Imai reference to have the specific ratios as respectively featured in claims 1 and 3 for example, or to provide the contact specific resistance between metallic silicide layers and impurity layers as featured in claim 23 for example. The Imai reference does not recognize or suggest that drive current can be improved by providing metallic silicide having ratios as claimed or contact specific resistance as claimed.

In the Response to Arguments section beginning on page 4 of the Final Office Action dated May 10, 2004, the Examiner has relied upon Manual of Patent Examining Procedure section 2144.05 IIA, and has asserted that the ratios in claims 1 and 3 would have been obvious by routine experimentation (optimization of ranges). However, as asserted during the telephone interview, since the Imai reference does not in general consider or address the ratio of metal to silicon in metallic silicide, one of ordinary skill would have no motivation to vary the ratio by experimentation to arrive at the ratios as featured in the claims, to improve drive current. In absence of such motivation provided by the relied upon prior art, the rejection would appear to be based on impermissible hindsight.

As also emphasized during the telephone interview, the Yamanaka et al. reference (U.S. Patent No. 5,915,197) as newly cited by the Examiner in the Response

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to Arguments section of the Final Office Action, merely discloses first and second RTA (rapid thermal anneal) processes, wherein the second RTA changes semi-stable  $\text{Co}_2\text{Si}$  into stable phase  $\text{CoSi}_2$ . The Yamanaka et al. reference does not disclose or suggest  $\text{CoSi}_\alpha$  having a ratio of cobalt to silicon that is 1 to  $\alpha$  ( $1 < \alpha < 2$ ) to improve drive current, because the stable phase  $\text{CoSi}_2$  has a ratio wherein  $\alpha = 2$ . The Yamanaka et al. reference therefore provides no apparent motivation to modify the ratio of the metallic silicide of the Imai reference to meet the features of respective claims 1 and 3.

Applicants therefore respectfully submit that the field effect transistors of respective claims 1 and 3 would not have been obvious in view of the prior art as relied upon by the Examiner taken singularly or together, and that this rejection of claims 1, 3, 23 and 24, is improper for at least these reasons. Applicants also respectfully submit that the field effect transistors of respective claims 5, 7, 9, 11, 13 and 15 would not have been obvious in view of the prior art as relied upon by the Examiner for at least somewhat similar respective reasons as set forth above, and that this rejection of claims 5, 7, 9, 11, 13, 15 and 23-34, is improper for at least these reasons.

Also, as noted above, the Examiner has apparently further relied upon the Yamanaka et al. reference in the Response to Arguments section of the Final Office Action, to further support this rejection. The Examiner has relied upon the Yamanaka et al. reference to provide an alleged teaching of different cobalt to silicon ratios, because such teaching is absent in the primarily relied upon Imai reference. Since it would appear that the Yamanaka et al. reference has been relied upon in an attempt to

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provide a necessary teaching that is absent from the primarily relied upon prior art, the Examiner's reliance upon the Yamanaka et al. reference raises new grounds of rejection. Accordingly, since the Yamanaka et al. reference raises new grounds of rejection, the Examiner is respectfully requested to withdraw the finality of the previous Office Action.

Claims 2, 4, 6, 8, 10, 12, 14 and 16 have been rejected under 35 U.S.C. 103(a) as being unpatentable over the Imai reference, in further view of Applicant's admitted prior art. Applicants respectfully submit that Applicant's admitted prior art as secondarily relied upon, does not overcome the above noted deficiencies of the Imai reference. Accordingly, Applicants respectfully submit that claims 2, 4, 6, 8, 10, 12, 14 and 16 would not have been obvious in view of the prior art as relied upon by the Examiner taken singularly or together, and that this rejection is improper for at least these reasons.

### Conclusion

The Examiner is respectfully requested to reconsider and withdraw the corresponding rejections, and to pass the claims of the present application to issue, for at least the above reasons.

In the event that there are any outstanding matters remaining in the present application, please contact Andrew J. Telesz, Jr. (Reg. No. 33,581) at (703) 715-0870 in the Washington, D.C. area, to discuss these matters.

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Pursuant to the provisions of 37 C.F.R. 1.17 and 1.136(a), the Applicants hereby petition for an extension of three (3) months to November 10, 2004, for the period in which to file a response to the outstanding Office Action. The required fee of \$980.00 should be charged to Deposit Account No. 50-0238.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment for any additional fees that may be required, or credit any overpayment, to Deposit Account No. 50-0238.

Respectfully submitted,

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